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provided with two latitude-levels; but for the sake of clearness data are given only for the upper one.

	Right Ascension.	Declination (1900).
Star 1	$9^h\ 14^m\ 50^s$	$+40^\circ\ 11'\ 40''$
Star 2	9 28 45	40 10 30

Level Readings.		
North End.	*South End.*	Micrometer Readings.
1900, April 8: Star 1		
5.9	28.6	15.5395
1900, April 8: Star 2		
13.8	36.6	13.0390
1900, April 9: Star 1		
16.0	37.8	15.2435
1900, April 9: Star 2		
5.4	27.4	13.2515

Hence, we have,

$$\Delta' R = 2.5005 \qquad \Delta' l = -\ 7.95 \text{ divisions}$$
$$\Delta'' R = 1.9920 \qquad \Delta'' l = +\ 10.50$$

Consequently, one division of the level is equivalent to

$$\frac{0.5085}{18.45} = 0.0276 \text{ micrometer turns.}$$

Nine determinations similar to the above gave only $0^R.0004$ as the probable error of a single determination. This corresponds to $0''.016$, one turn of the micrometer being about $40''$.

The above method, appropriately modified, may also be applied to striding-levels of meridian instruments.

UKIAH, CALIFORNIA, January 22, 1901.

OBSERVATION OF *LEONIDS* AT POMONA COLLEGE, CLAREMONT, CALIFORNIA.

COMMUNICATED BY F. P. BRACKETT.

After the disappointment of last year, when an organized force of over fifty observers was trained for a campaign of at least a week, with charts and tables, and three photographic stations, and were met with almost total cloudiness all the week and a general failure of *Leonids* to attack all along the line, the astronomy class of Pomona College entered upon the observation of *Leonids* this year with more quiet and modesty. The plan of observation covered every night from November 12th to 17th, but the weather was so unfavorable that careful watch and record was kept only during the hours from 12 to 4 A.M. on the mornings of November 14th to 16th. This time was divided into periods of half an hour each, with three or more observers for each period. One noted the time of every call, a second kept the count, while the third mapped and described as many meteors as possible. Meteor paths were charted each night, but the limited knowledge of uranography and lack of experience on the part of the amateur observers rendered them unsatisfactory for the discussion of radiant points. Less than thirty were seen in *Leo* and the adjacent constellations, and over thirty in *Gemini*, *Auriga*, *Taurus*, and *Orion*, while nearly fifty were seen in the circumpolar constellations visible, chiefly in *Ursa Major*. Beside the *Leo* radiant, there seems to be one also in *Gemini* between α, β, τ, and T.

The results are exhibited chiefly in the accompanying tables.*

The whole number would, of course, have been much larger if there had been no moonlight. For the twenty periods during which they were seen, the average interval was five minutes; for the three periods from 12:30 to 2:00 Friday morning, it was 1^{m} 12^{s}. Twice, a little before 2 o'clock, two were seen at once, and there were thirteen intervals of less than one minute. During all the remainder of the time there were only seven such intervals. Any attempt, however, to discuss the frequency of fall must be unsatisfactory because of the haze and cloudiness at times. More might have been seen during the later periods of the 15th and 16th if the sky had been clear, and the larger numbers in the second, third, and fourth period of the 16th may have been due to the absence of moonlight; yet the order of results is probably correct, and indicates that the greatest number fell on the 16th, and the least on the 15th. The large proportion of non-*Leonids* is noticeable.

About seventy-five, or three fifths, of the meteors observed

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*Table I, giving detailed description of the individual meteors is here omitted. The initials in the column "Observer" in Table II stand respectively for students Cone, Kelso, Warner, Baker, Bixby, Day, Jencks, G. Smith, Stewart, Voorhees, Baldwin, H. Smith, McFadden, Lester, A. Gould, T. Gould, Moles, McLean, and Steffa.

TABLE II.— RESULTS OF OBSERVATION BY PERIODS.

Date.	No.	Time.	No. of Meteors.	No. of *Leonids.*	Field.	Weather.	Observer.
Nov.		Begin. End.					
14	I	12:00 – 12:30	5	3	East......	Clear	C. K. W.
14	II	12:30 – 1:00	5	2	"	"	" " "
14	III	1:00 – 1:30	3	3	"	"	" " "
14	IV	1:30 – 2:00	11	3	"	"	" " "
14	V	2:00 – 2:30	7	5	E. N. & Z.	"	Ba. Bi. D.
14	VI	2:30 – 3:00	2	2	" "	"	" " "
14	VII	3:00 – 3:30	5	5	Whole sky	"	" " "
14	VIII	3:30 – 4:00	9	6	" "	"	" " "
15	IX	12:00 – 12:30	1	0	N. & E. ..	Cloudy except near the zenith.	J. Sg. St. V.
15	X	12:30 – 1:00	0	0	" " ..		" " " "
15	XI	1:00 – 1:30	2	1	" " ..		" " " "
15	XII	1:30 – 2:00	4	1	" " ..		" " " "
15	XIII	2:00 – 2:30	3	2	....		" " " "
15	XIV XV XVI	2:30 – 4:00	0	0	....	Cloudy......	Bl. Sh. Mf. L.
16	XVII	12:00 – 12:30	8	1	Whole sky	Hazy E. & S.	Ga. Gt. Mo. Mc. Sf.
16	XVIII	12:30 – 1:00	15	5	"	" "	" " "
16	XIX	1:00 – 1:30	13	2	"	" "	" " "
16	XX	1:30 – 2:00	13	6	"	" "	" " "
16	XXI	2:00 – 2:30	6	1	E. N. & Z.	Hazy........	Ba. Bi. D.
16	XXII	2:30 – 3:00	3	0	" "	More hazy...	" " "
16	XXIII	3:00 – 3:30	4	2	" "	" " ...	" " "
16	XXIV	3:30 – 4:00	1	1	" "	Cloudy......	" " "
			120	49			

TABLE III.

Time.	Total Number of Meteors.			Number of *Leonids.*		
A. M.	Nov. 14th.	15th.	16th.	Nov. 14th.	15th.	16th.
12:00 – 12:30 ..	5	1	8	3	0	1
12:30 – 1:00 ..	5	0	15	2	0	5
1:00 – 1:30 ..	3	2	13	3	1	2
1:30 – 2:00 ..	11	4	13	3	1	6
2:00 – 2:30 ..	7	3	6	5	2	1
2:30 – 3:00 ..	2	0	3	2	0	0
3:00 – 3:30 ..	5	0	4	5	0	2
3:30 – 4:00 ..	9	0	1	4	0	1
Total.....	47	10	63	27	4	18

were between the second and fourth magnitudes; twenty were of first magnitude and higher; six of class — 1, and one — 2.

Three fourths were white or yellow, in about the same proportion, and about five each of blue, green, orange, and red.

The duration of half were too swift for estimation, and nearly fifty more were seen for less than one second. Only five were visible for more than one second.

Both duration and length of path were doubtless shortened by moonlight and cloudiness. A course of some 30° and over was traced for about twenty, from 15° to 20° for about thirty, some 10° for about fifty, and a shorter course of 5° or 6° and less for about twenty.

ASTRONOMICAL OBSERVATIONS IN 1900.

Made by Torvald Köhl, at Odder, Denmark.

Variable Stars.

*Z Cygni.**

March	23:	Z = d.
	30:	id.
April	18:	= e.
	25:	< e.
August	27:	id.

October	16:	= b.
	21:	id.
	23:	id.
	28:	id.
November	12:	= a-
December	22	= c.

S Ursæ majoris.†

Jannary	25:	S = d.
February	20:	< c.
March	1:	a little > d.
	7:	id.
	14:	id.
	23:	= e.
	30:	id.
April	18:	< e. a little > f.
	25:	< e.
August	16:	= e.
	27:	id.
	29:	id.

September	2:	id.
	13:	< d. > e.
	15:	= d.
	18:	id.
	25:	id.
	26:	id.
October	14:	> d. < c.
	23:	= d.
	28.	id.
November	11:	a little < e.
December	22:	< g.

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* *Vide* the sketch in the *Publications* A. S. P., No. 48, page 69.

† *Vide* the sketch in the *Publications* A. S. P., No. 73, page 56.